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kind he had worked on at home. Fortunately, however, it was found that the mice at Athens were even more susceptible to inoculation and also to infection through the alimentary canal than those in Germany. This fact was established in a few days by inoculating and feeding the mice in the laboratory with cultures of the organism. Preparations for experiment on a large scale were at once made, and Loeffler, Dr. Abel, and Dr. Pampoukis, director of the bacteriological laboratory in Athens, set sail on April 16 for Volo, and went by rail from thence to Larissa, the capital of Thessaly.

Loeffler had found that the micro-organism, *Bacillus typhi murium*,¹ grows very well in a decoction of oat and barley straw to which 1 per cent of peptone and $\frac{1}{2}$ per cent of grape sugar have been added. So a large amount of this liquid was prepared and inoculated. Pieces of bread about the size of a finger were soaked in these cultures after abundant growth was secured, and the bread was then distributed in the openings of the burrows of the mice. A number of mice were also inoculated and turned loose; this was done because the mice eat the bodies of those that die, and spread contagion in this way. It had been amply proved by experiment that the bread soaked in the culture could be eaten by man and various domestic animals with perfect impunity.

In a few days after the holes had been baited, news came from all sides that the infected bread had disappeared from the holes. This news was very satisfactory, as it could by no means be certainly counted upon beforehand that the mice would eat the bread, surrounded as they were with abundance of fresh food. A visit to Bakrena, about nine days after the experiment had been started at that place, showed that the mice had ceased their activity entirely. In two other places, Nochali and Amarlar, a similar result was obtained. Several burrows at these places were opened and found to be empty or to contain sick, dead, or half-eaten mice. There were sick and dying mice sticking in many of the openings. A number of sick and dead mice were carried to Larissa, and examined. They were found to present all the characteristic lesions of the typhoid fever of mice, and to contain the organism in their internal organs.

Reports from other places which Loeffler subsequently received, were all satisfactory. So Loeffler is justified in closing his very interesting account of his expedition with the following words: "The science of bacteriology has thus again proved its great practical significance, and hence also its right to be specially cultivated and advanced."

LETTERS TO THE EDITOR.

*** Correspondents are requested to be as brief as possible. The writer's name is in all cases required as proof of good faith.

On request in advance, one hundred copies of the number containing his communication will be furnished free to any correspondent.

The editor will be glad to publish any queries consonant with the character of the journal.

The Ancient Libyan Alphabet.

IN *Science*, Aug. 12, Professor Keane offers some inquiries and statements relating to a note of mine on the Libyan alphabet.

The note referred to was partly based on an article by Dr. Collignon, as was indicated. Dr. Collignon is one of the highest authorities living on north African ethnography and archæology, as Professor Keane doubtless knows. He would not make the following statement unless he had good grounds for it: "Quant à la forme même des caractères libyques, on ne peut nier qu'elle ne remonte à une haute antiquité; elle est, en tout cas, antérieure à Carthage." Of course, Dr. Collignon is aware of the common theory that the letters were of Punic origin; but considers it time to discard it.

¹ Centralblatt f. Bacteriologie und Parasitenkunde Bd. IX., No. 5.

As to Professor Keane's suggestion of the origin of the name *tifinar*, from *Finagh* = Phœnician, it is purely fanciful, and his assertion that the stress "still falls on the root *fin*," is utterly incorrect, as it falls on the last syllable, and not on the penult (see Hanoteau, "Grammaire Tamachek," p. 5).

It is true that in loose language the whole alphabet, or any alphabet, is called *tifinar*; and it is not quite correct to say that all the *tiddebakin* are vowels. The proper distinction is thus given: "Les signes exclusivement tracés en traits sont nommés *tifinar*; ceux tracés avec des points sont nommés *tiddebakin*."

How Professor Keane, quoting Hanoteau's "Grammaire Tamachek," can deliberately write that in the Libyan alphabet "curves occur quite as frequently as straight lines," can only be explained by the supposition that he never saw the book he quotes. It is before me now, and out of the thirty-five simple and compound letters only three are curvilinear, and all of these are recognized as mere variants, and placed after the true rectilinear forms. I refuse to think that this is a fair example of the accuracy of Professor Keane's quotations.

Whether they were derived from a rectangle or not, has something more than theoretical importance in relation to their possible derivation from Egyptian forms; but it need not be insisted on. That all the original forms were composed of right lines is a point of considerable interest, which has not been disproved.

As to what writers may be considered specialists in the study, there is room for legitimate difference of opinion. When Professor Keane rejects Duveyrier, he rejects the author who beyond all others has a practical acquaintance with the written speech of the Touaregs — the only tribe who still use the *tifinar*. Professor Newman's works have been laid aside as substantially useless, on account of their phonetic system, by the best French scholars — notably René Basset; and Dr. Oudney never claimed to be an adept in the tongue.

D. G. BRINTON.

Media, Pa., Aug. 15.

Remarks on the Migration of Coleopters.

ONE might suppose, on simply looking at the map of the earth, that the animals of the northern hemisphere would exhibit a greater structural uniformity than those south of the equator.

In the north the continents on one side are separated only by the narrow Behring's Strait, on the other the Gulf Stream, and the prevailing west-east storms connect both continents, making migration of insects a possibility.

The similarity of climates of the northern half of the continents is less favorable to the production of generic varieties than are the southern lands, isolated by wide troughs of the ocean, with a variety of climes and altitudes; and, indeed, as we go northwards the varieties decrease in number.

If we abstract from the coleopterous groups genera which are most likely to migrate from one continent to the other by commerce, such as the Staphilinidæ, the Silphidæ, or the phytophagous insects, transportable in their food-plants, the rest of the forms will represent the aboriginal masses of 400 years ago.

In the far north above latitude 50°, and where Asia approaches so near to the American shores, the indigenous genera of both continents differ comparatively little; the genera are common, and some species are identical in both continents. Commerce in these regions was slight, even up to our days, and an uninterrupted natural development manifests itself everywhere.

True northern genera, such as the *Carabus*, *Calosoma*, and *Cychrus*, have species of strict similarity, such as *Calosoma sycophanta*, *indagator*, etc., extending from the Atlantic to the Pacific in the eastern continent, and *Cal. scrutator*, *calidum*, and *wilcoxii* in America; *Carabus cancellatus*, *clathratus*, and *monilis* on one side, *Car. serratus*, *limbatus*, and *vinctus* on the other, and *Car. truncaticollis* on both sides of Behring Sea.

If we assume that the land holding the greater number of species of one genus constitutes a centre of development, that is the birth-place of that genus. Accordingly, the genera *Cychrus* and *Calosoma* are to be taken as of American origin; the first being represented in Europe and Asia by four and in America by thirty species, the

latter in Europe by about half a dozen and in America by twenty-five species; while *Carabus* is represented in Europe and Asia by the respectable number of 100, and in America by a short dozen species.

My favorite family of Poelaphidæ, unlike their relatives, the Staphilinidæ, seem not very apt to migrate on the lines of commerce, but extend over a space of 60° latitude north and south.

In the colder regions of the north the species of one genus inhabiting both continents are very similar, while the tropical and southern genera, with a comparatively small number of species, differ in form so much that they can hardly be retained under one name.

Their habits, which suffer an involuntary modification by transportation through atmospheric forces into localities of different nature, produced in the fittest to survive changes of the most grotesque forms, and by repeated dislocations confined them in circumscribed localities.

This holds good for the tropical forms of this family in the large continents; but there are examples of genera occurring in places far apart. *Tmesiphorus*, *Tyrus*, and *Hamotus* are of that nature. To the latter belong *Upulona raffray* and *Cercocerus leconte*, which differ, according to M. Raffray, by the more elongated form of the last joint of the maxillary palpi in *Cercocerus*, and the former occurs in the Friendly Islands, and the latter, together with the rest of *Hamotus*, is found in the western regions and on the Pacific coast of America, north and south.

The streams of the Pacific Ocean are directed from west to east, and therefore would not allow a migration against the stream; consequently the original abode of those species must have been situated in the west of America, and their migration, considering the multiplication of forms in America, must date back to the remotest ages.

The Tenebrionidæ present a typical family of non-migrating beetles. The large majority of tenebrionide genera are wingless. They are slow in motion, and live on dead animal and vegetable matter. The generic forms of most of those in America are but distantly related to those of the eastern continent. The genera common to both continents are few, and the few immigrant species are winged, with one exception recently found — *Blaps mortiraga* — and such genera, which are at present assumed to be common to both lands (as *Asida*), owe their name to the now accepted basis of analytical marks.

The existence of these analogical forms can be explained only by the different geological and geographical conditions of the surface of the earth in remote ages. But there is always to be considered the axiom that similar conditions produce similar forms.

EMIL BRENDÉL.

Cause of a National Trait.

It is a matter of common observation that Hebrews, as a rule, are more than ordinarily devoted to their families, and their home-life is beautiful in many ways. As everything has a cause, the most plausible one in this regard appears to me to be the severe persecutions to which that race has been subjected for centuries, compelling clannishness and affording them their greatest happiness at home. Persistent influences acting through numberless generations would surely institute a racial peculiarity such as this.

S. V. CLEVINGER.

Chicago, Aug. 15.

Review of some Recent Publications of the U. S. National Museum.

FOR some time past the National Museum has been following the very desirable plan of issuing, in separate pamphlet form, the contributions of those authors who publish in the Proceedings or other reports of that institution. These pamphlets are uniformly contained in neat paper-covers, tasteful in color, and bear upon the outside page the title and author of the article and its number, from what standard publication of the Museum extracted, and, finally, the volume, pages, and plates (if any) of the latter. It would be well, indeed, if other institutions and societies always

followed suit in these last two features, for if one thing be more annoying than another to a worker in science with a working library, it is to receive reprints of papers that bear nowhere upon them this very important information; especially when an author desires to quote from reprints that have been submitted to him. At this date the Museum has issued a number of pamphlets of the character to which the attention of the reader has just been drawn, and it is believed that brief remarks upon these may prove to be of interest.

In No. 898 Mrs. M. Burton Williamson gives "An Annotated List of the Shells of San Pedro Bay and Vicinity," in which two new species are described by W. H. Dall. This list is brought quite up to date, carefully describes a great many species, is systematically arranged, and is illustrated by 33 excellent figures on plates. It will, no doubt, prove of use and value to the conchologists of the Pacific coast and elsewhere. Dr. Edwin Linton, in No. 893, gives some very full and valuable "Notes on Avian Entozoa," illustrated by nearly 100 figures of structural details. Entozoa found in specimens of *Larus californicus*, *Fuligula valisneria*, *Oedemia americana*, and *Pelecanus erythrorhynchus* are described, in addition to parasites found in other birds collected by Mr. P. L. Jouy at Guaymas, Mexico. "One new genus was met with among the parasites of the duck, *Oedemia americana*. This genus, which I have named *Epision*, is characterized by a singular modification of the anterior part of the body into an organ for absorption and adhesion." In a brief paper, entitled "A Maid of Wolpai," with one plate, Dr. R. W. Shufeldt gives an account of the customs and dress of the young women of that Pueblo (No. 889); and the same writer, in another paper (No. 902) entitled "The Evolution of House Building among the Navajo Indians," describes the gradual improvement observed by him in the building of their houses by those Indians in New Mexico, since their contact with the whites. The paper is accompanied by three plates illustrating the subject. Lieut. T. Dix Bolles of the navy comments briefly on "Chinese Relics in Alaska" (No. 899, one plate), and from his studies of them he is forced to believe that at least two centuries ago a Chinese junk must have been driven upon the Alaskan coast. A very useful paper is that by Mary J. Rathbun, giving a "Catalogue of the Crabs of the Family Periceridæ in the U. S. National Museum" (No. 901), and it is illustrated by numerous figures of various species of that group. Papers of this class are especially desirable, and at the time of its appearance there were to be found in the collections of the Museum 48 species of *Periceridæ*, for which a valuable synonymy is given, with a "Key" to genera and species. Akin to this last is still another beautifully illustrated paper by Mr. James E. Benedict, on "Corystoid Crabs of the genera *Telnessus* and *Erimacrus*." Very little is known of these forms, and the writer's article is based on specimens collected in Alaska by Dall, and on the *Albatross* collections (No. 900). No less interesting are two admirable papers by Dr. Leonhard Stejneger, both of which are illustrated (Nos. 894, 904). The first gives a "Preliminary description of a new Genus and Species of Blind Cave Salamander from North America," — a remarkable form from the Rock House Cave, Missouri. "A new genus and species of salamander may not be such a startling novelty even at this late date, but the interest is considerably heightened when we have to do with the first and only blind form among the true salamanders." It has been named by the author *Typhlotriton spelæus*. Dr. Stejneger's second paper is of considerable length, presenting, as it does, extensive "Notes on a Collection of Birds made by Harry V. Henson in the Island of Yeso, Japan." It contains many excellent embryological plates. Professor Carl H. Eigenmann, in No. 897, makes a contribution to the study of "The Fishes of San Diego," in which "especial attention has been paid to the spawning habits and seasons, the embryology, and migration of the fishes of Southern California." The paper is of great economic value, and lacks not in interest to the anatomist.

Finally, we have three very thorough entomological articles from the pen of Dr. John B. Smith (Nos. 890-892). They deal with a "Revision of the Genus *Cucullia*; Revision of the *Dicopinae*; Revision of *Xylomiges* and *Morrisonia*" (plates II., III.). These contributions will be welcomed by the entomologist, fully